UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,516	02/26/2004	Boris Verman	10544-288	6460

7590 09/21/2005

John M. Card
BRINKS HOFER GILSON & LIONE
P.O. Box 10395
Chicago, IL 60610

EXAMINER	
KAO, CHIH CHENG G	

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/787,516	VERMAN ET AL.	
	Examiner	Art Unit	
	Chih-Cheng Glen Kao	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-42 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-42 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 10 June 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2/26/04, 8/9/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the movable blade, as exemplified in claims 2 and 3, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1, 16, 26, 29, 36, and 39-41 are objected to because of the following informalities, which appear to be minor draft errors including lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following corrections may obviate their respective objections: (claim 1, line 4, "the convergence"; deleting "the"), (claim 16, line 7, "the shape"; replacing "the" with - -a- -), (claim 16, line 8, "the convergence"; deleting "the"), (claim 26, line 2, "the distal portion"; replacing "the" with - -a- -), (claim 29, line 2, "the far portion"; replacing "the" with - -a- -), (claim 36, line 5, "the convergence"; deleting "the"), (claim 39, lines 1-2, "the fixed portion" and "the movable portion"; changing the dependency of claim 39 from claim 36 to claim 38), (claim 40, lines 1-2, "the fixed portion" and "the movable portion"; changing the dependency of claim 40 from claim 36 to claim 38), and (claim 41, lines 1-2, "the fixed portion" and "the movable portion"; changing the dependency of claim 41 from claim 36 to claim 38).

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 4, 9, 10, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Hasegawa (US Patent Application Publication 2003/0152192).

4. Regarding claim 1, Hasegawa discloses a device comprising a two-dimensional optic (fig. 10, #64), which conditions x-rays from an x-ray source (fig. 1, #1), and at least one aperture including a fixed portion and a moveable portion that is moveable relative to the fixed portion to adjust x-rays by selectively occluding a portion of the x-rays (fig. 4).

Note that the functional recitation "to adjust convergence of the x-rays" has not been given any patentable weight because it is narrative in form. This recitation does not structurally distinguish the claim from prior art. See MPEP 2114.

5. Regarding claim 4, Hasegawa further discloses wherein the fixed portion is a stationary blade (fig. 4, blade under #2) and the movable portion is a movable blade (fig. 4, #2).

6. Regarding claim 9, Hasegawa further discloses wherein the movable portion is moveable between positions (fig. 4).

7. Regarding claim 10, Hasegawa further discloses a second movable portion (fig. 10, #9), the second movable portion (fig. 10, #9) being movable with respect to the first movable portion (fig. 4, #2) and the fixed portion (fig. 4, portion under #2).

8. Regarding claim 15, Hasegawa further discloses wherein the aperture (fig. 10, #2 and 3) is positioned between the optic (fig. 10, #64) and the source (fig. 10, #1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1, 2, 16, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (US Patent 4958363) in view of Hounsfield (US Patent 3944833).

Nelson et al. discloses a device comprising a two dimensional optic as a first optical element defining a first reflective surface (fig. 11, #12), a second optical element defining a second reflective surface (fig. 11, #26), the first and second reflective surfaces (fig. 11, #12 and 26) conditioning and reflecting x-rays from an x-ray source (fig. 11, #10), and at least one aperture including a fixed portion (fig. 11, #16) to occlude a portion of the x-rays, that is coupled to the first optical element (fig. 11, #12) and the second optical element (fig. 11, #26).

However, Nelson et al. does not specifically disclose a movable portion that is movable relative to a fixed portion, and wherein the fixed portion is a slit and the movable portion is a blade that moves across the slit.

Hounsfield teaches a movable portion (fig. 10, #69) that is movable relative to a fixed portion (fig. 10, #68), and wherein the fixed portion is a slit (fig. 10, #68) and the movable portion is a blade (fig. 10, #69) that moves across the slit (fig. 10, #68).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Nelson et al. with the movable portion of Hounsfield, since one would be motivated to make such a modification to better control x-rays (fig. 10) as implied from Hounsfield.

Note that the functional recitation "to adjust convergence of the x-rays" has not been given any patentable weight because it is narrative in form. This recitation does not structurally distinguish the claim from prior art. See MPEP 2114.

10. Claims 1, 3, 16, 24, 36, 38, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simonet (US Patent 5204533).

Simonet discloses a device comprising at least one aperture attached to a far end including a fixed portion (fig. 1, #16) and a movable portion (fig. 1, #20) that is movable relative to the fixed portion (fig. 1, #16) to selectively occlude a portion of x-rays (col. 4, lines 63), and wherein the fixed portion is a pinhole (fig. 1, #16) and the movable portion is a blade (fig. 1, #20) that moves across the pinhole (fig. 1, #16).

However, Simonet does not specifically disclose a two-dimensional optic defining a near end and a far end, or a first optical element defining a first reflective surface and a second optical element defining a second reflective surface in this embodiment.

Simonet teaches a two-dimensional optic defining a near end and a far end in another embodiment, or a first optical element defining a first reflective surface and a second optical element defining a second reflective surface (fig. 2, #52) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Simonet in one embodiment with the optical elements in the other embodiment, since one would be motivated to make such a modification for easier placement (col. 6, lines 43-55) as implied from Simonet.

Note that the functional recitation "to adjust convergence of the x-rays" has not been given any patentable weight because it is narrative in form. This recitation does not structurally distinguish the claim from prior art. See MPEP 2114.

11. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa as applied to claim 1 above, and further in view of Paolini (US Patent 3852594).

Hasegawa discloses a device as recited above.

However, Hasegawa does not specifically disclose a second aperture positioned adjacent to or near a sample, and wherein the second aperture is a slit.

Paolini teaches a second aperture (fig. 2, #34) positioned adjacent to or near a sample (fig. 2, #29), and wherein the second aperture is a slit (fig. 2, #34).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Hasegawa with the second aperture of Paolini, since one would be motivated to make such a modification to reduce scattering (col. 2, line 44) as shown by Paolini for a better signal.

12. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa as applied to claim 1 above, and further in view of Jiang (US Patent 6330301).

Hasegawa discloses a device as recited above.

However, Hasegawa does not specifically disclose a second aperture positioned adjacent to or near a sample, and wherein the second aperture is a pinhole.

Jiang teaches a second aperture (fig. 1, #28) positioned adjacent to or near a sample (fig. 1, in #24), and wherein the second aperture is a pinhole (fig. 1, #28).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Hasegawa with the pinhole of Jiang, since one would be motivated to make such a modification to reduce scattering (col. 1, lines 34-38) as implied from Jiang for a better signal.

13. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa as applied to claim 1 above, and further in view of Schuster et al. (US Patent 6226349).

14. Regarding claims 11 and 12, Hasegawa discloses a device as recited above.

However, Hasegawa does not specifically disclose a multilayer optic or an x-ray reflective crystal.

Schuster et al. teaches a multilayer optic (fig. 1, #5) or an x-ray reflective crystal (fig. 6, #21).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Hasegawa with the optic of Schuster et al., since one would be motivated to make such a modification for better controlling x-rays (col. 1, lines 48-60, and fig. 6) as implied from Schuster et al.

15. Regarding claims 13 and 14, Hasegawa discloses a device as recited above.

However, Hasegawa does not specifically disclose an aperture positioned between an optic and a sample, and wherein the aperture is positioned at or near a distal portion of the optic relative to a source.

Schuster et al. teaches an aperture (fig. 1, #15) positioned between an optic (fig. 1, #5) and a sample (fig. 1, #9), and wherein the aperture (fig. 1, #15) is positioned at or near a distal portion of the optic (fig. 1, #5) relative to a source (fig. 1, #1-6).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Hasegawa with the aperture position and optic of Schuster et al., since one would be motivated to make such a modification for better controlling x-rays (col. 8, lines 15-20) as implied from Schuster et al.

16. Claims 36, 37, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gutman et al. (US Patent 6041099) in view of Iwasaki et al. (US Patent 6504902).

17. Regarding claim 36, Gutman et al. discloses a device comprising an optical element which conditions an x-ray beam, the optical element defining a near end and a far end (fig. 5, middle component), and an aperture (fig. 5, #58) attached to the far end of the optical element (fig. 5, middle component), the aperture (fig. 5, #58) selecting a portion of the x-ray beam delivered by the optical element (fig. 5, middle component).

However, Gutman et al. does not specifically disclose adjustability.

Iwasaki et al. teaches adjustability (col. 4, lines 55-57).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Gutman et al. with the adjustability of Iwasaki et al., since one would be motivated to make such a modification for better controlling x-rays (col. 4, lines 51-57) as implied from Iwasaki et al.

18. Regarding claim 37, Gutman et al. further discloses wherein the aperture (fig. 5, #58) is a diaphragm (fig. 5, #56).

19. Regarding claim 42, Gutman et al. further discloses wherein the optical element is a two-dimensional optical element (fig. 5, middle component).

20. Claims 16-22, 25, 27-33, 35, 38, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gutman et al. and Iwasaki et al. as applied to claim 36 above, and further in view of Hasegawa.

21. Regarding claims 16, 25, 38, and 41, and for purposes of being concise, Gutman et al. as modified above suggests a device as recited above. Gutman et al. further discloses a second optical element defining a second reflective surface (fig. 5, middle component).

However, Gutman et al. does not specifically disclose wherein an aperture includes a fixed portion and a movable portion that is movable relative to the fixed portion, the aperture

being adjusted by moving the movable portion relative to the fixed portion, and wherein the fixed portion is a fixed blade and the movable portions is a movable blade.

Hasegawa teaches wherein an aperture (fig. 4, #25 and 26) includes a fixed portion (fig. 4, portion under #2) and a movable portion (fig. 4, #2) that is movable relative to the fixed portion (fig. 4, portion under #2), the aperture (fig. 4, #25 and 26) being adjusted by moving the movable portion (fig. 4, #2) relative to the fixed portion (fig. 4, portion under #2), and wherein the fixed portion is a fixed blade (fig. 4, portion under #2) and the movable portions is a movable blade (fig. 4, #2).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Gutman et al. as modified above with the portions of Hasegawa, since one would be motivated to make such a modification for better controlling x-rays (paragraph 5) as implied from Hasegawa.

22. Regarding claim 17, Gutman et al. further discloses wherein the first reflective surface is orthogonal to the second reflective surface (fig. 5, middle component).

23. Regarding claims 18-22, Gutman et al. further discloses wherein at least one reflective surface has a substantially elliptic shape, wherein both reflective surfaces have a substantially elliptic shape, wherein one reflective surface has a substantially elliptic shape and the other reflective surface has a substantially parabolic shape, wherein at least one reflective surface has a substantially parabolic shape, and wherein both reflective surfaces have a substantially parabolic shape (fig. 4, and col. 3, lines 35-40).

24. Regarding claims 27-29, Gutman et al. as modified above suggests a device as recited above.

However, Gutman et al. does not specifically disclose wherein a fixed blade and a movable blade are each substantially L-shaped, wherein the movable blade is movable between positions, and wherein a movable blade occludes x-rays reflected from a far portion of an x-ray reflective optic.

Hasegawa further teaches wherein a fixed blade and a movable blade are each substantially L-shaped, and wherein the movable blade is movable between positions (fig. 4). Iwasaki et al. further teaches wherein a movable blade (col. 4, lines 55-57) occludes x-rays reflected from a far portion of an x-ray reflective optic (fig. 1, #1).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further incorporate the device of Gutman et al. as modified above with the blades of Hasegawa, since one would be motivated to make such a modification for better controlling x-rays (paragraph 5) as implied from Hasegawa.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further incorporate the device of Gutman et al. as modified above with the adjustability of Iwasaki et al., since one would be motivated to make such a modification for better controlling x-rays (col. 4, lines 51-57) as implied from Iwasaki et al.

25. Regarding claims 30-33, Gutman et al. further discloses wherein the first optical element is a first multilayer optic and the second optical element is a second multilayer optic (col. 3, lines

40-45), and wherein the first multilayer optic and the second multilayer optic have depth or laterally graded d-spacing (col. 3, lines 60-63).

26. Regarding claim 35, Gutman et al. further discloses wherein the aperture (fig. 5, #58) is positioned between the source and the first and second optical elements (fig. 5, middle component).

27. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gutman et al., Iwasaki et al., and Hasegawa as applied to claim 25 above, and further in view of Schuster et al.

Gutman et al. as modified above suggests a device as recited above.

However, Gutman et al. does not specifically disclose wherein an aperture is positioned at or near a distal portion of an optic relative to a source.

Schuster et al. teaches wherein an aperture (fig. 1, #15) is positioned at or near a distal portion of an optic (fig. 1, #5) relative to a source (fig. 1, #1-6).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Gutman et al. as modified above with the aperture position of Schuster et al., since one would be motivated to make such a modification for better controlling x-rays (col. 8, lines 15-20) as implied from Schuster et al.

28. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gutman et al. ('099), Iwasaki et al., and Hasegawa as applied to claim 16 above, and further in view of Gutman et al. (US Patent 6014423).

Gutman et al. ('099) as modified above suggests a device as recited above.

However, Gutman et al. ('099) does not specifically disclose x-ray reflective crystals.

Gutman et al. ('423) teaches x-ray reflective crystals (col. 3, line 42).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Gutman et al. ('099) as modified above with the crystals of Gutman et al. ('423), since multilayer reflective optics and reflective crystals were art-recognized equivalents at the time the invention was made (col. 3, lines 40-45), and one having ordinary skill in the art would have found it obvious to substitute one for the other.

29. Claims 36, 38, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. in view of Hounsfield and Gutman et al. ('099).

For purposes of being concise, Nelson et al. in view of Hounsfield suggests a device as recited above.

However, Nelson et al. does not specifically disclose an attached aperture.

Gutman et al. ('099) teaches an attached aperture (fig. 5, #58).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the device of Nelson et al. as modified above with the attached aperture of Gutman et al. ('099), since one would be motivated to make such a modification for compacting a device (fig. 5) as implied from Gutman et al. ('099).

Note that the functional recitation "to adjust convergence of the x-rays" has not been given any patentable weight because it is narrative in form. This recitation does not structurally distinguish the claim from prior art. See MPEP 2114.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gk

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER